
iot
the power of
WEBDUINO
HTML
JAVASCRIPT
CSS
ARDUINO
success

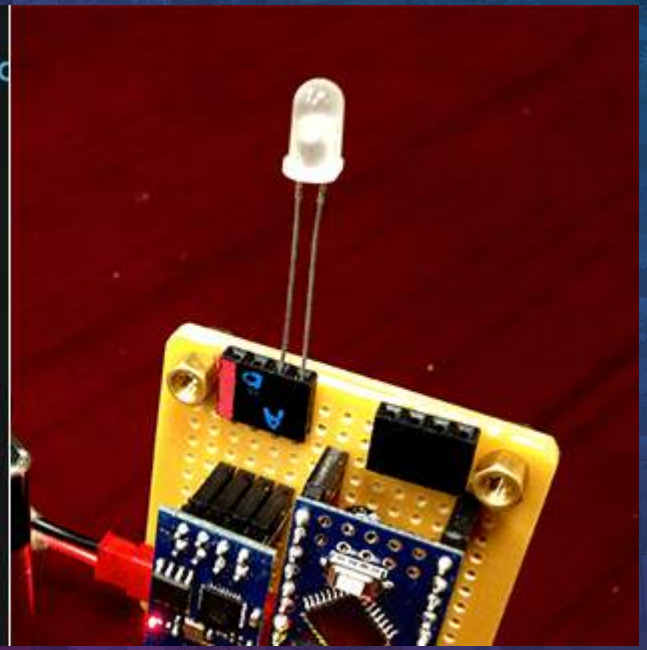
使用Arduino
從來沒有如此簡單過...

插電就是 IoT !!!

用HTML/JS控制 Arduino

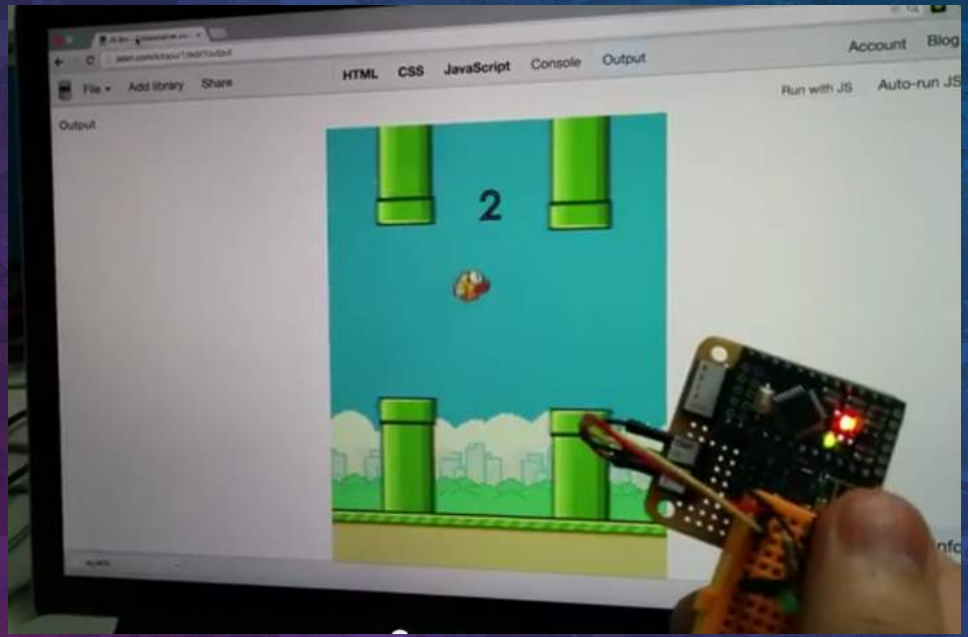
直接用JavaScript控制LED

```
5     <title>Webduino LED</title>
6     <link rel="import" href="http://webduino.io/c
7     </link>
8   </head>
9   <body>
10    <web-arduino id='board'>
11      <wa-led id='led' pin='10'></wa-led>
12    </web-arduino>
13
14    <script>
15      board.on('ready', function() {
16
17      });
18    </script>
19  </body>
20  </html>
```



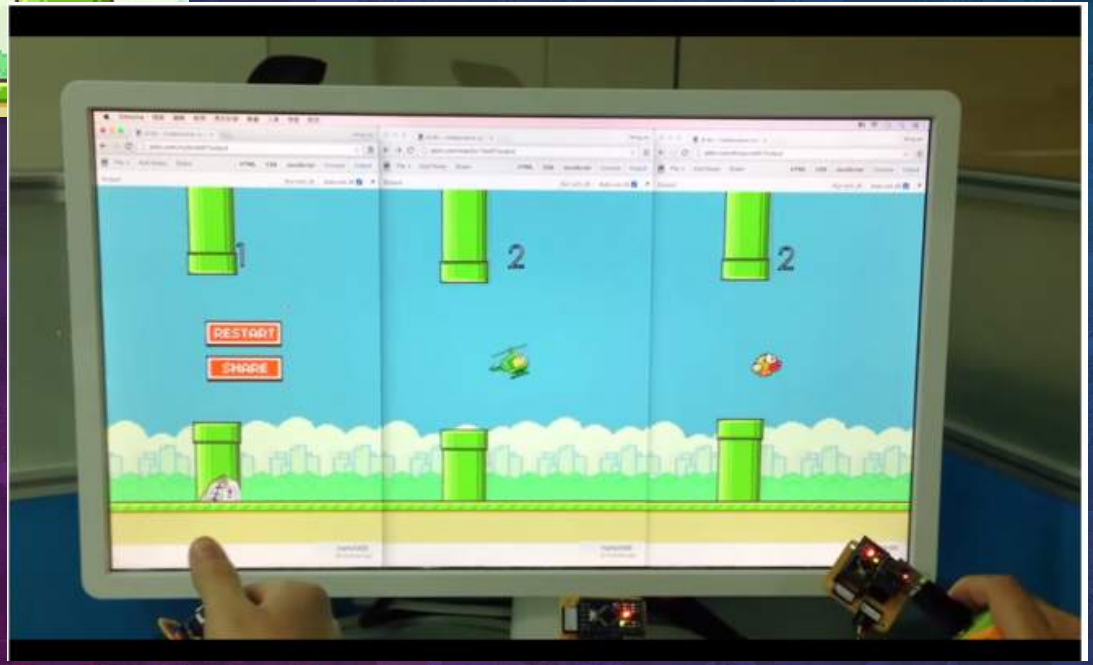
用JS事件監聽實體按鈕

```
var btn =
    document.getElementById('button');

btn.on('pressed', function() {
  led.on();
});
```

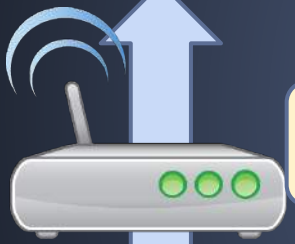


輕鬆整合既有網頁遊戲

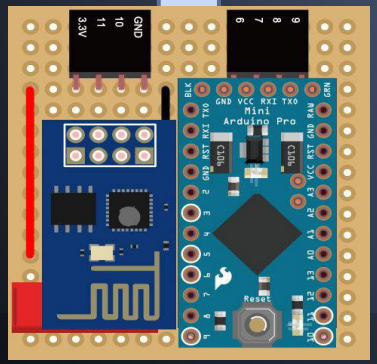
多人同時即時互動



Internet

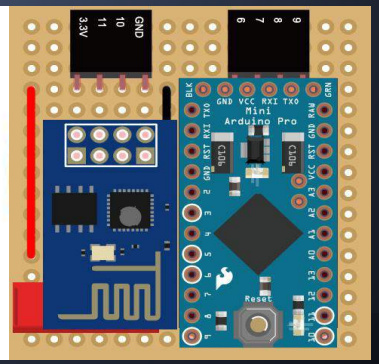


小威須透過
WiFi分享器上網



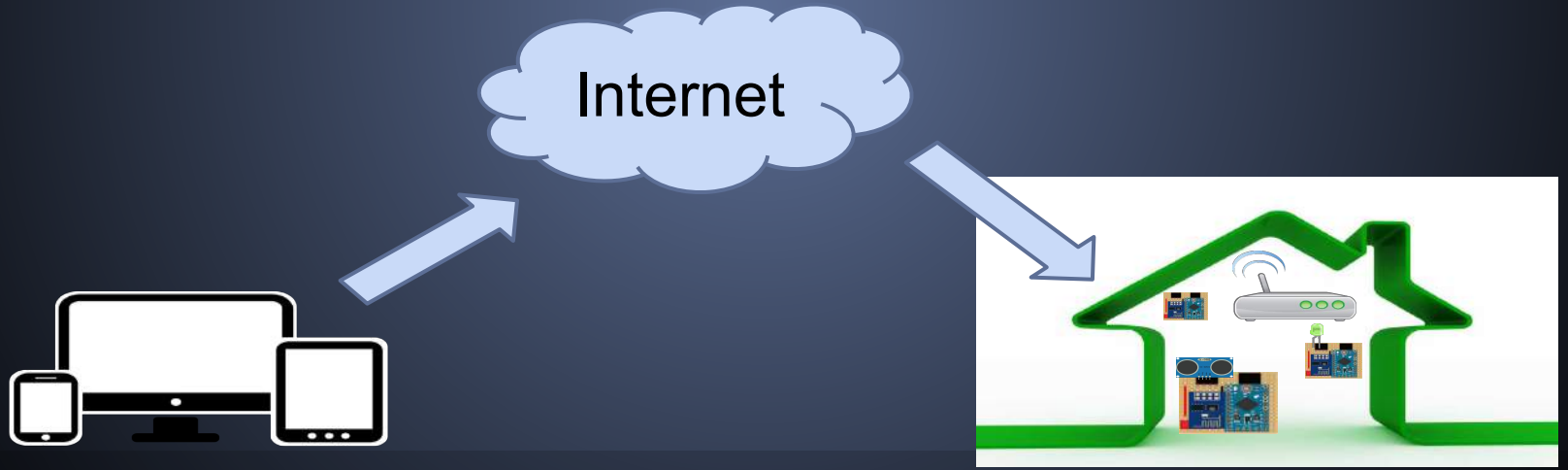
Internet

或透過手機分享
WiFi上網

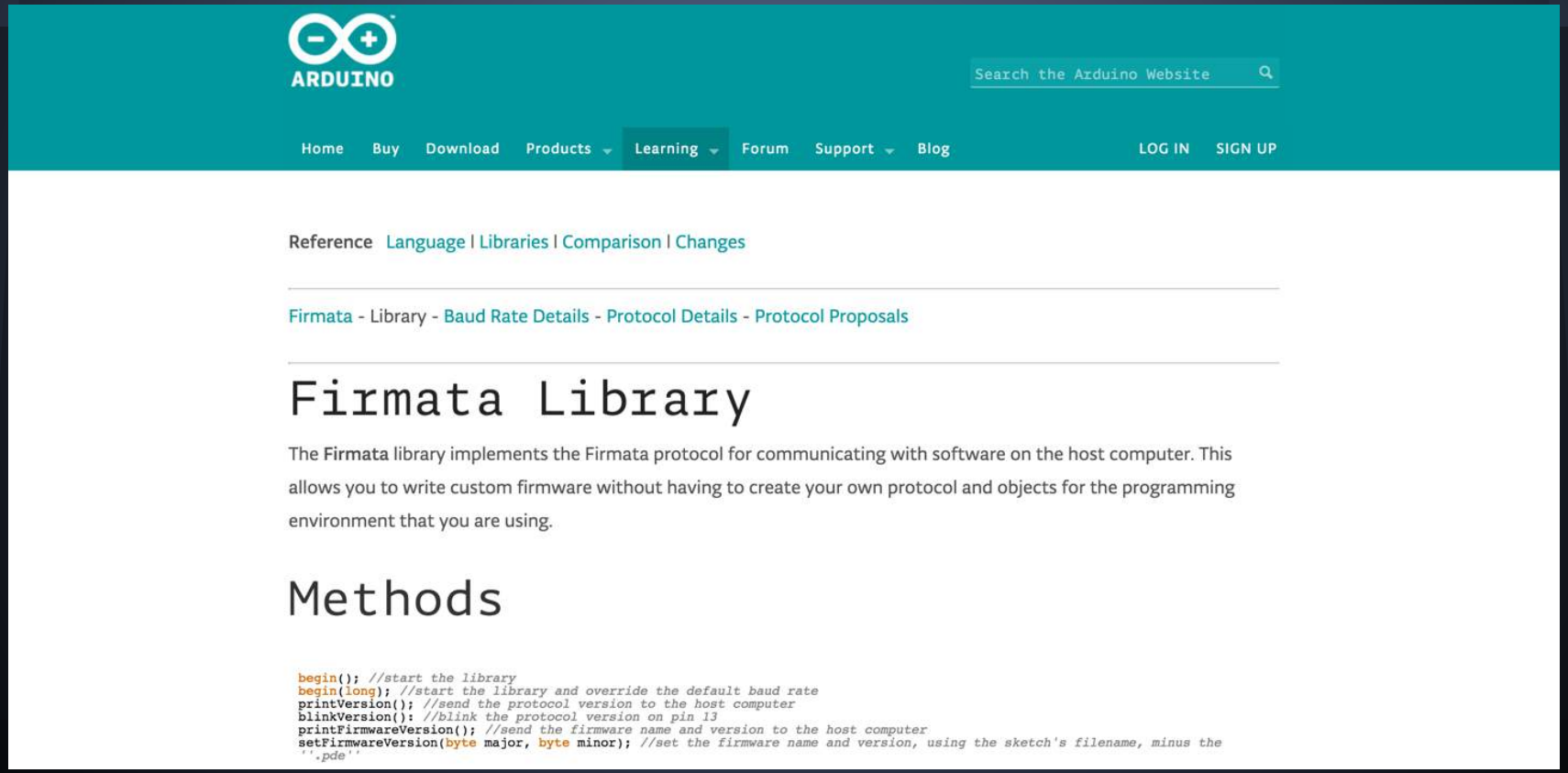


程式架構

1. 用WebComponent 整合 Breakout
2. 用WebSocket (Firmata) 和後端Server交互
3. 後端Server走TCP/IP (Firmata) 控制 Webduino



Arduino Firmata



用 HTML/JS 控制 Arduino，玩轉 IoT

Webduino = WebComponents + Arduino

http://fb.me/webduino

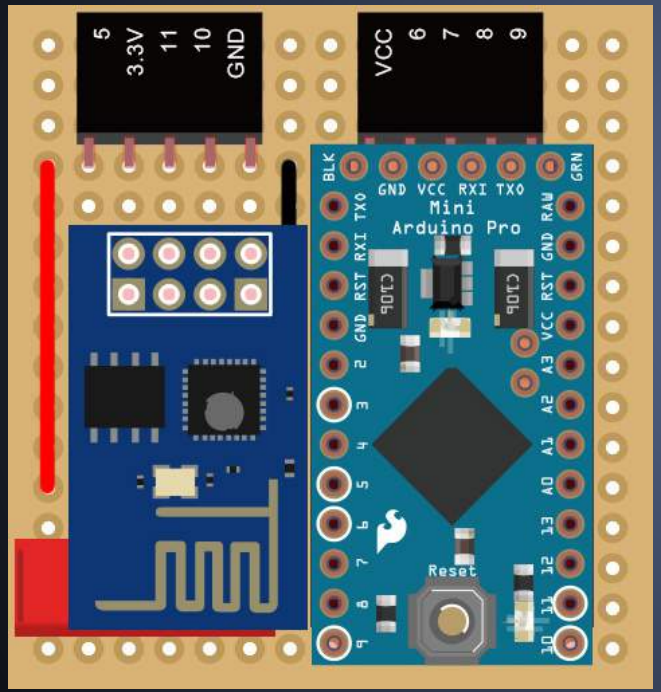
http://webcomponents.org/

http://arduino.cc

Webduino 與 Arduino 的差異

比較項目	Arduino	Webduino
開發語言	C / C++	HTML / JavaScript
開發環境	Arduino IDE	瀏覽器 / ...
連接方式	USB	WiFi
更新程式	連接燒錄	立即更新

開發版的HTML寫法

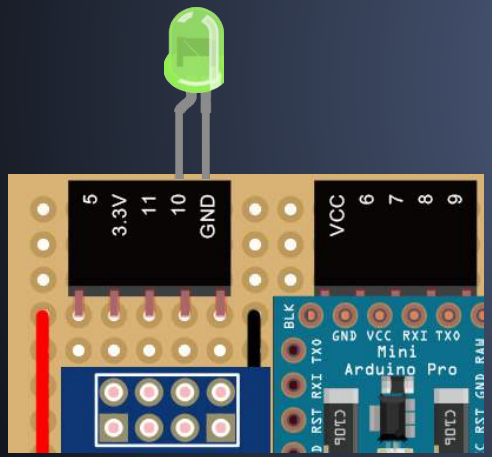


識別碼

<web-arduino **device**="????">

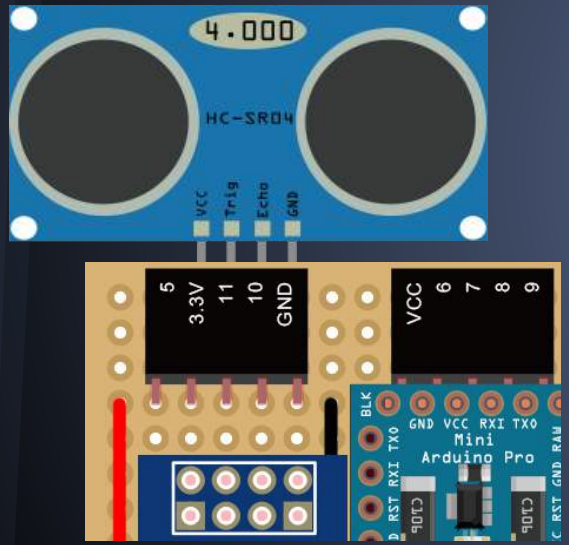
</web-arduino>

Web Components - 組裝元件




```
<web-arduino device="MNW?">

  <wa-led  pin='10'></wa-led>

</web-arduino>
```

Web Components - 組裝元件




```
<web-arduino device="MNW?">

  <wa-ultrasonic trig="11" echo="10">
  </wa-ultrasonic>

</web-arduino>
```

HTML需引入js、arduino元件

```
<head>
  //Web Components http://webcomponents.org/
  <script src="http://webduino.io/components/webcomponentsjs/webcomponents.js"></script>
  //Arduino板子
  <link rel='import' href='http://webduino.io/components/webduino/web-arduino.html'></link>




</head>
```

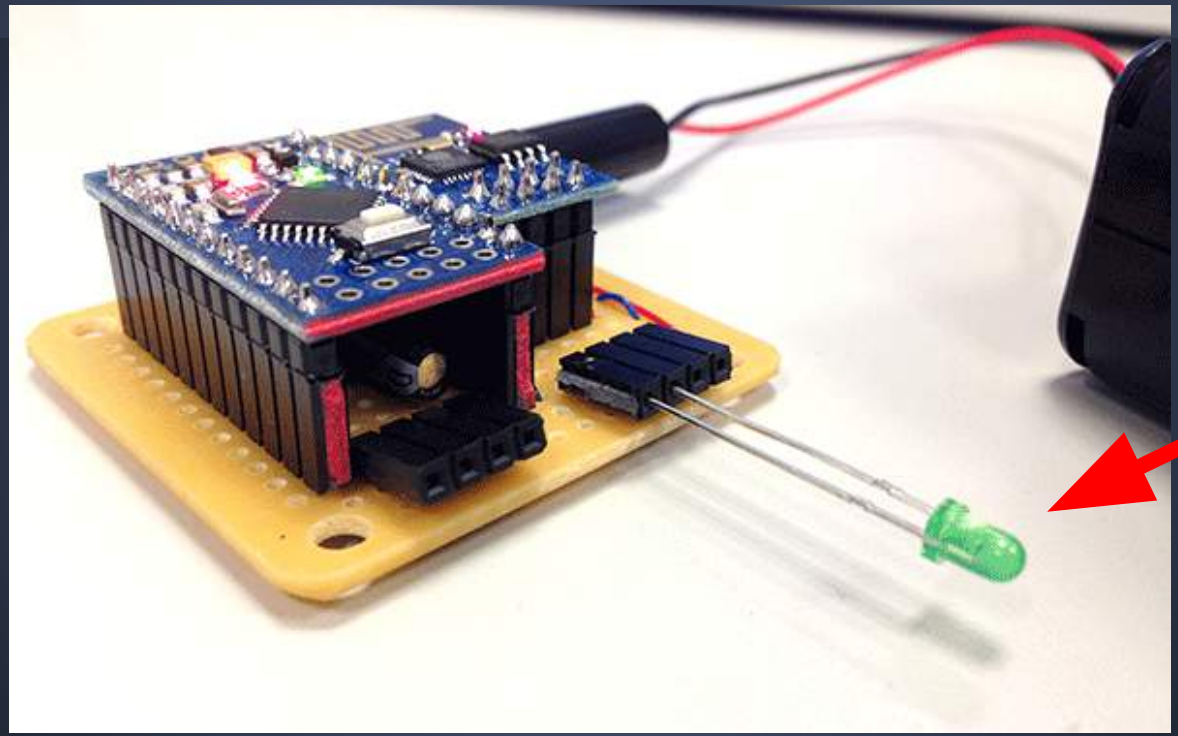
目前元件清單

```
// 按鈕
<link rel='import' href='http://webduino.io/components/webduino/wa-button.html'></link>

// LED
<link rel='import' href='http://webduino.io/components/webduino/wa-led.html'></link>

// 3色全彩LED
<link rel='import' href='http://webduino.io/components/webduino/wa-rgbled.html'></link>

// 伺服馬達元件
<link rel='import' href='http://webduino.io/components/webduino/wa-servo.html'></link>

// 超音波元件
<link rel='import' href='http://webduino.io/components/webduino/wa-ultrasonic.html'></link>
```

目前元件清單

```
// 人體紅外線
<link rel='import' href='http://webduino.io/components/webduino/wa-pir.html'></link>

// 水銀傾斜開關
<link rel='import' href='http://webduino.io/components/webduino/wa-mercury.html'></link>

// 振動開關
<link rel='import' href='http://webduino.io/components/webduino/wa-shock.html'></link>

// 溫濕度感測
<link rel='import' href='http://webduino.io/components/webduino/wa-dht11.html'></link>

// 步進馬達
<link rel='import' href='http://webduino.io/components/webduino/wa-stepper.html'></link>
```

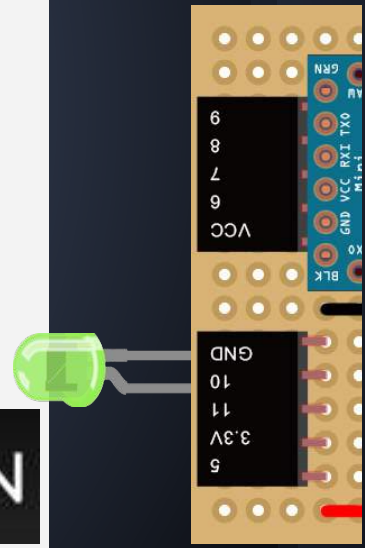
點亮 LED 燈



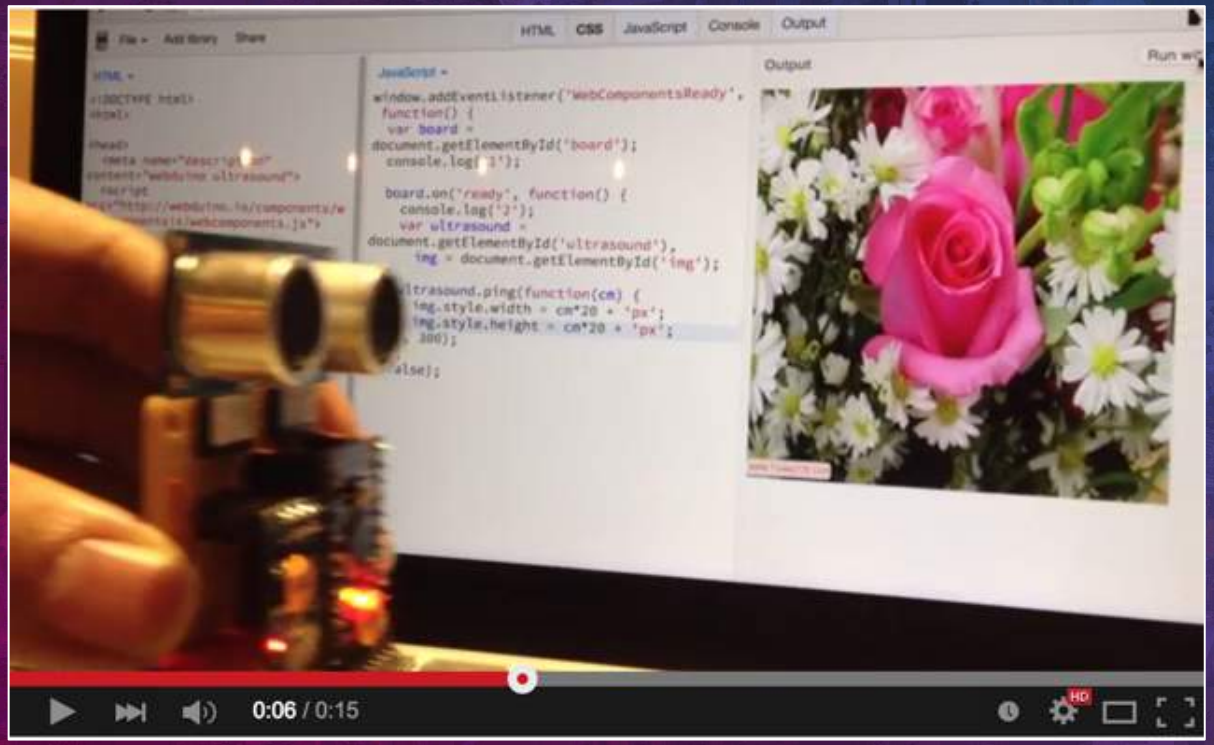
HTML控制LED寫法

HTML

```
<html>
  <head>
    <script src="http://webduino.io/components/webcomponentsjs/webcomponents.js"
></script>
    <link rel='import' href='http://webduino.io/components/webduino/web-arduino.
html'></link>
    <link rel='import' href='http://webduino.io/components/webduino/wa-led.
html'></link>
  </head>
  <body>
    <web-arduino id='board' device='MNW?'>
        <wa-led id='led' pin='10' state='on'></wa-led>
    </web-arduino>
    <h1>LED On</h1>
  </body>
</html>
```



超音波縮放圖片



HTML Code

超音波縮放圖片

HTML

```
<html>
<head>
  ...略...
</head>
<body>
  <web-arduino id='board' device='reJx'>
    <wa-ultrasonic id='ultrasonic' trig='11' echo='10'></wa-
ultrasonic>
  </web-arduino>
  <img id='img' src='http://www.hua.
com/flower_picture/meiguihua/images/r17.jpg'></img>
</body>
</html>
```

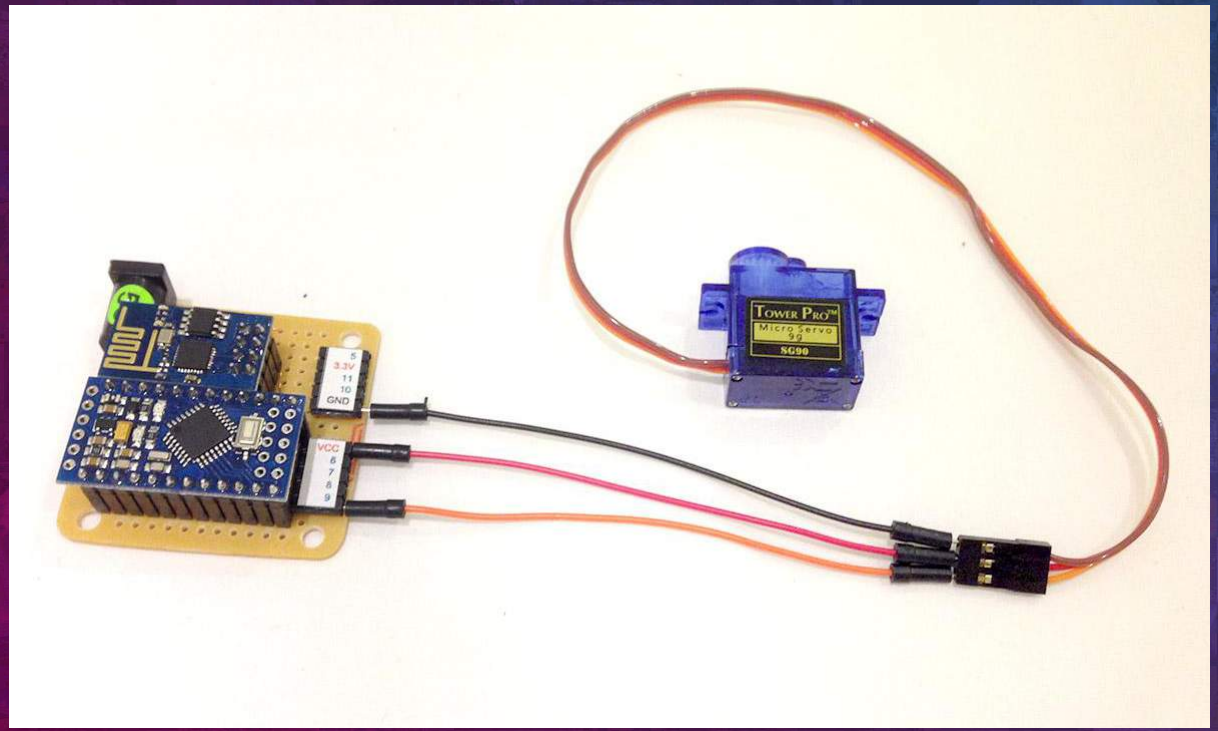
CSS

```
#img {
  width: 200px;
  transition:.3s;
}
```

JavaScript

```
window.addEventListener('WebComponentsReady', function() {
  var board = document.getElementById('board');

  board.on('ready', function() {
    var ultrasonic = document.getElementById('ultrasonic'),
      img = document.getElementById('img');

    ultrasonic.ping(function(cm) {
      img.style.width = cm*20 + 'px';
      img.style.height = cm*20 + 'px';
    }, 300);
  });
}, false);
```

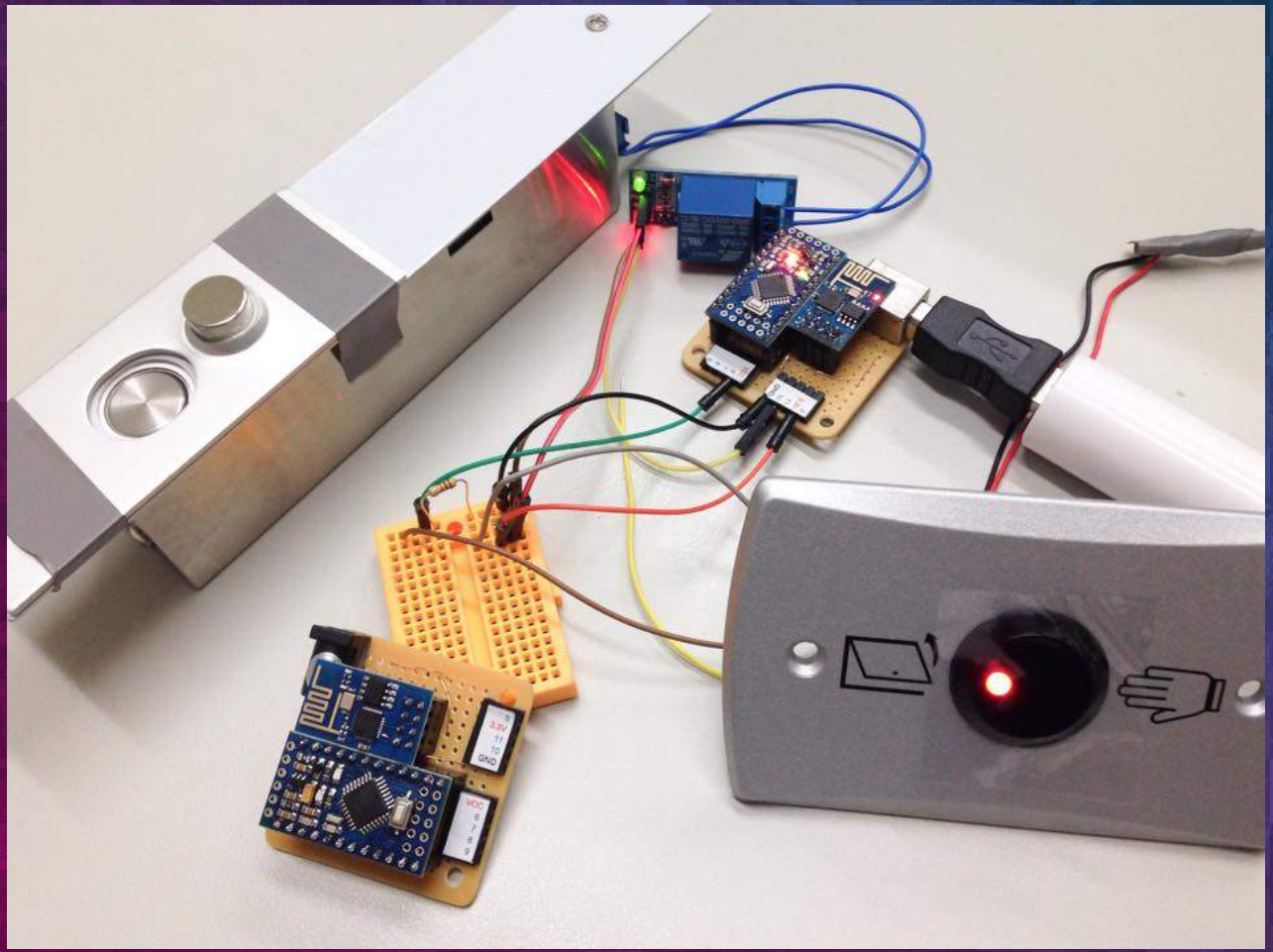
控制伺服馬達

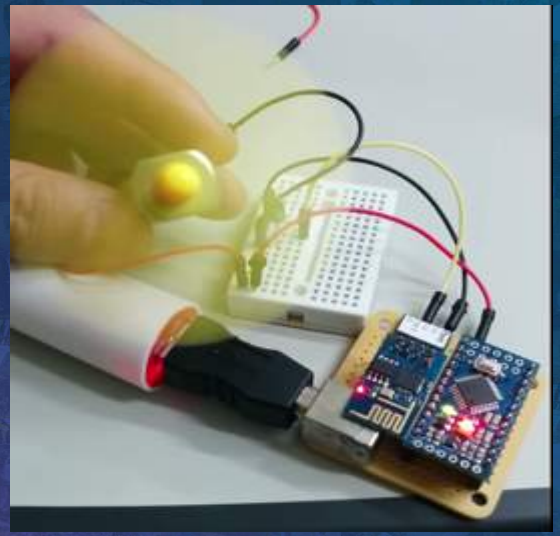


HTML Code

HTML

```
<!DOCTYPE html>
<html>

<head>
  <meta name="description" content="webduino ultrasound">
  <title>UltraSound Alert</title>
  <script src="http://webduino.io/components/webcomponentsjs/webcomponents.js"></script>
  <link rel='import' href='http://webduino.io/components/webduino/web-arduino.
html'></link>
  <link rel='import' href='http://webduino.io/components/webduino/wa-servo.html'></link>
</head>

<body>
  <web-arduino id='board' device='MND0'>
    <wa-servo id='servo' pin='9' angle='10'></wa-servo>
  </web-arduino>
</body>
</html>
```






結合Webduino，按『 按鈕 』，再來一次!
Webudino開發版可直接使用Web技術控制Arduino傳感器，
這例子展示了按按鈕就可以播放、重撥Youtube影片

謝謝聆聽